FEASIBILITY STUDY

NC 68
From Existing 4-lanes, North of I-40
To US 220
Guilford County
R-2413

Prepared by
Planning and Research Branch
Division of Highways
N. C. Department of Transportation

R. B. Davis, P. E.
Project Planning Engineer

R. G. Dawson, Jr., P. E.
Head of Feasibility & Special Studies Unit

7-31-89
Date

J. M. Greenhill, P. E.
Manager, Planning and Research

I. GENERAL DESCRIPTION

This report covers the improvement of NC 68 to a four-lane divided highway from the end of the existing four lanes at SR 2011 to US 220 (see Figures 1 & 2). The proposed project, all on new location, is 8.0 miles long. This project is included in the 1988-1996 Transportation Improvement program for feasibility study and/or right-of-way protection.

II. PURPOSE OF PROJECT

Existing Route Characteristics

NC 68 is a major north-south route serving the western portion of Greensboro and High Point. NC 68 is the primary access to the Greensboro, High Point, Winston-Salem Regional Airport, with the airport entrance located approximately 1.2 miles south of the southern project terminal. NC 68 also serves as the main route northward for gasoline tankers bound from the largest inland tank farms east of the Mississippi River. Existing NC 68 is classified as a Rural Major Collector in the North Carolina Functional Classification System and is a Federal Aid Secondary Route.

The proposed realignment of NC 68 recommended in this report is designated a Minor Arterial in the Guilford County Thoroughfare Plan (See Figure 3). This alignment is also identified a Strategic Corridor for the relocation of US 220 in the North Carolina Transportation Improvement Program. Highways are selected as Strategic Corridors based upon their importance to a region and their value to the entire state. If US 220 is rerouted along the project, the classification in the North Carolina Functional Classification system would be upgraded to a Minor Arterial, and it would become a Federal Aid Primary Route.

The existing cross section on NC 68 consists of a 24-foot paved roadway from the existing four lanes to US 158 and a 22-foot paved roadway from US 158 to US 220. There are 5-foot unpaved shoulders and a 100-foot right-of-way throughout the entire length. The horizontal alignment on NC 68 is good, but the vertical alignment is only fair with numerous grades in the 5 to 7% range. All intersections are at grade and are stop sign controlled.

At the southern project terminal, NC 68 has been improved to a four-lane divided cross section with a 44-foot depressed median. The 3.5-mile section of NC 68 between the southern project terminal and I-40 has partial access control with one access point and median opening located just north of I-40 and a second one at the intersection of SR 2133. The SR 2133 intersection, which is just south of the proposed project, was recently signalized. At the northern project terminal, the project ties into US 220 near the Haw River. US 220 is currently a two-lane highway with a 22-foot paved roadway width. This portion of US 220 is scheduled for right-of-way protection in the Transportation Improvement Program (R-2309). A feasibility study completed in 1988 recommends US 220 be improved to a four-lane divided roadway from south of the Haw River northward into Rockingham County and to a five lane curb and gutter section from this point back to the existing five lanes in Greensboro.

Traffic Volumes, Capacity, and Accident Record

The current traffic volume on NC 68 ranges from a low of 6,200 vehicles per day (vpd) at the US 220 intersection to a high of 12,000 vpd at end of the existing four lanes. With the proposed realignment of NC 68 presented in this report and the rerouting of US 220 along this alignment, the projected traffic volume on the proposed project is 25,000 vpd.

With the present traffic volumes, NC 68 is operating at Level of Service D or E during peak periods throughout the entire length from the existing four lanes to US 220. This is resulting in congestion that will worsen in the future, as traffic volumes continue to grow, if NC 68 is not improved. The improvements to NC 68 recommended in this report will increase the level of traffic service to Level of Service C or better throughout the planning period.

During the period from January 1, 1986 through May 31, 1989 a total of 188 accidents were reported on the portion of NC 68 between the existing four-lane section in Guilford County and the US 220 intersection in Rockingham County. This resulted in an accident rate of 145.9 accidents per 100 million vehicle miles (ACC/100 MVM) compared to a statewide average of 214.2 ACC/100 MVM for all two-lane, rural NC routes over the same period. There were 5 fatal accidents during the period, and 99 of the accidents resulted in injuries. The most prevalent accident types were angle accidents (23%), rear-end accidents (21%), and running off the right side of the road (16%). Four of the five fatal accidents involved trucks. The high truck volumes on this highway (with TTST volumes ranging from 9 to 14% and dual tired trucks accounting for 5% of the current traffic volumes) combined with steep grades and limited sight distance in some locations have resulted in a high potential for serious accidents on the existing route. The proposed relocation with four travel lanes, flatter grades, and full access control should greatly reduce the accident potential on NC 68. With the rerouting of the through traffic, the safety potential on the existing route should also be improved.

Need for Project

The improvement of NC 68 is needed to provide adequate capacity for existing and future traffic volumes and to improve the safety of the highway. The construction of the proposed project will provide a vital link in the Guilford County Thoroughfare Plan.

III. RECOMMENDATIONS AND COSTS

It is recommended NC 68 be improved to a four-lane freeway on new location from the existing four-lane section of NC 68 to US 220 just south of the Haw River. The recommended cross section would consist of two 28-foot pavements (including 2-foot paved shoulders on each side) divided by a 60-foot depressed median. The median width can be adjusted as necessary to comply with the new standards on median widths that are

presently being developed. The recommended alignment is shown as Alternative 2 on Figure 2. Interchanges are proposed at existing NC 68, SR 2127 (which is shown on the Guilford County Thoroughfare Plan as a Major Collector and possible future relocation of NC 150), NC 150, and US 220. Grade separations are proposed at SR 2269, SR 2128, and SR 2115. Figure 2 also shows a grade separation at the Southern Railway, but this railroad has been abandoned and no grade separation is needed.

The estimated costs of the project are as follows:

Construction		$36,700,000
Right-of-Way		11,700,000
	TOTAL	$48,400,000

The construction cost includes engineering and contingencies and the right-of-way cost includes relocation, acquisition, and utility costs.

IV. ALTERNATIVES CONSIDERED

In addition to the recommended alternative, the alternatives of (a) widening the existing roadway from the end of the existing four lanes to US 220, (b) constructing a 4-lane road on new location from the existing four lanes to the present US 220/NC 68 intersection, and (c) widening approximately 2 miles of the existing roadway, then constructing a 4-lane road on new location to US 220 at the Haw River were considered.

The alternative of widening the existing alignment would have the advantages of utilizing the existing highway for two of the four lanes and tying into the proposed US 220 interchange for which right-of-way has already been purchased. However, this alternative has many serious drawbacks. It would be highly desirable to provide full control of access on NC 68, but this would be very difficult to achieve if the existing alignment is utilized. Providing full control of access on an existing roadway is extremely expensive and disruptive to the surrounding development. If full access control is not used, the safety of the project would be compromised due to driveways entering the highway in areas of limited sight distance. Even without access control, much of the development along one side of the highway would be disrupted by the additional lanes. If this alternative is used, the existing vertical alignment with steep grades (up to 7%) would remain. There are two historic properties listed on the National Register of Historic Places located adjacent to NC 68. Approximately 2.6 miles north of the southern project terminal is Bailes Old Mill which was built in 1820 and is still in operation. This mill is located on the east side of NC 68, and it replaces an earlier mill built in 1767. The site of the earlier mill and the present mill pond are located on the west side of NC 68. The second historic property is the Oak Ridge Military Academy which has been designated a National Historic District. The Academy was founded in 1852 and is located on the east side of NC 68 at the NC 150 intersection. Both of these properties would have to be avoided by the realignment of NC 68 in their vicinity. A third area that would likely need to be bypassed is the Stokesdale community located at the intersection of

US 158. This area is heavily developed and has several older buildings that may be historic. The cost of this alternative would be considerably more than the recommended alternative. With a length of 12.6 miles, this alternative is approximately 60% longer than the recommended alternative. Due to the higher cost, lack of access control, steep grades, and disruption to existing development, this alternative is not recommended.

The alternative of constructing NC 68 on new location from the existing four lanes to the proposed US 220/NC 68 interchange would completely avoid the historic properties. It would allow provision of full control of access, a desirable feature for a strategic corridor route. The primary disadvantage of this alternative is the high cost due to its length being 60% greater than the recommended alignment and the fact that this alternative traverses more steeply rolling terrain than the recommended alignment. For this reason, this alternative is not recommended.

After the elimination of the longer alternatives discussed above, more detailed cost analyses were prepared for the two alternatives shown on Figure 2.

Alternative 1 is the alignment shown on the Guilford County Thoroughfare Plan. It utilizes the existing NC 68 corridor from the end of the existing four lanes to just north of Reedy Fork Creek where it splits from the existing roadway and travels northeasterly on new location to US 220 at the Haw River. This alignment is more disruptive to the existing development than the recommended alignment (designated as Alternative 2), because it utilizes an existing roadway that has adjacent development. It is especially disruptive if full access control is provided. The table below shows a comparison of cost and number of relocatees between Alternative 1 with partial access control, Alternative 1 with full access control, and Alternative 2. On the section of NC 68 that would be widened under Alternative 1, the additional lanes would be provided on the east side, since estimates showed this side would require fewer residential relocations and cost approximately $500,000 less than providing the additional lanes on the west side.

Alternative 2 follows much of the same corridor as Alternative 1, but it would be built entirely on new location to facilitate the acquisition of full access control. This alternative was found to be the least costly and least disruptive of the alternatives studied. It would provide full access control and better alignment and still be in conformance with the Guilford County Thoroughfare Plan. Because of these reasons, Alternative 2 is the recommended alignment.

COMPARISON OF ALTERNATIVES

	Relocation		Cost		
	Residential	Business	Construction	Right-of-Way	Total
Alt. 1 Partial Control	19	4	$37,500,000	$15,100,000	$52,600,000
Alt. 1 Full Control	24	4	$38,000,000	$16,400,000	$54,400,000
Alt. 2 Full Control	8	3	$36,700,000	$11,700,000	$48,400,000

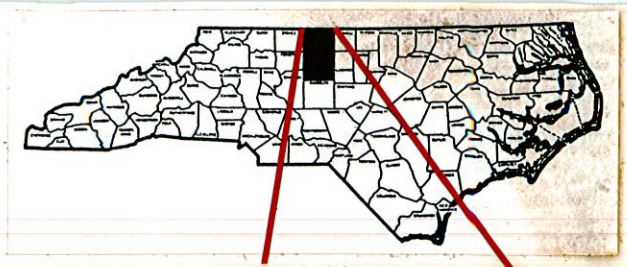
V. ENVIRONMENTAL EFFECTS

The implementation of the proposed project is not expected to result in any significant impact on the environment. The construction of the project will require the relocation of an estimated 8 residences and 3 businesses. The project will also result in increased noise levels for development near the roadway. There will be some wetland involvement where the project crosses Reedy Fork Creek, Beaver Creek, a small unnamed stream and where it ties into US 220 at the Haw River. Other minor impacts will be primarily related to the actual construction of project and will cease upon completion of the project. These include minor erosion and siltation, increased noise levels from construction machinery, and delay and inconvenience to motorists using roads and highways affected by the proposed construction.

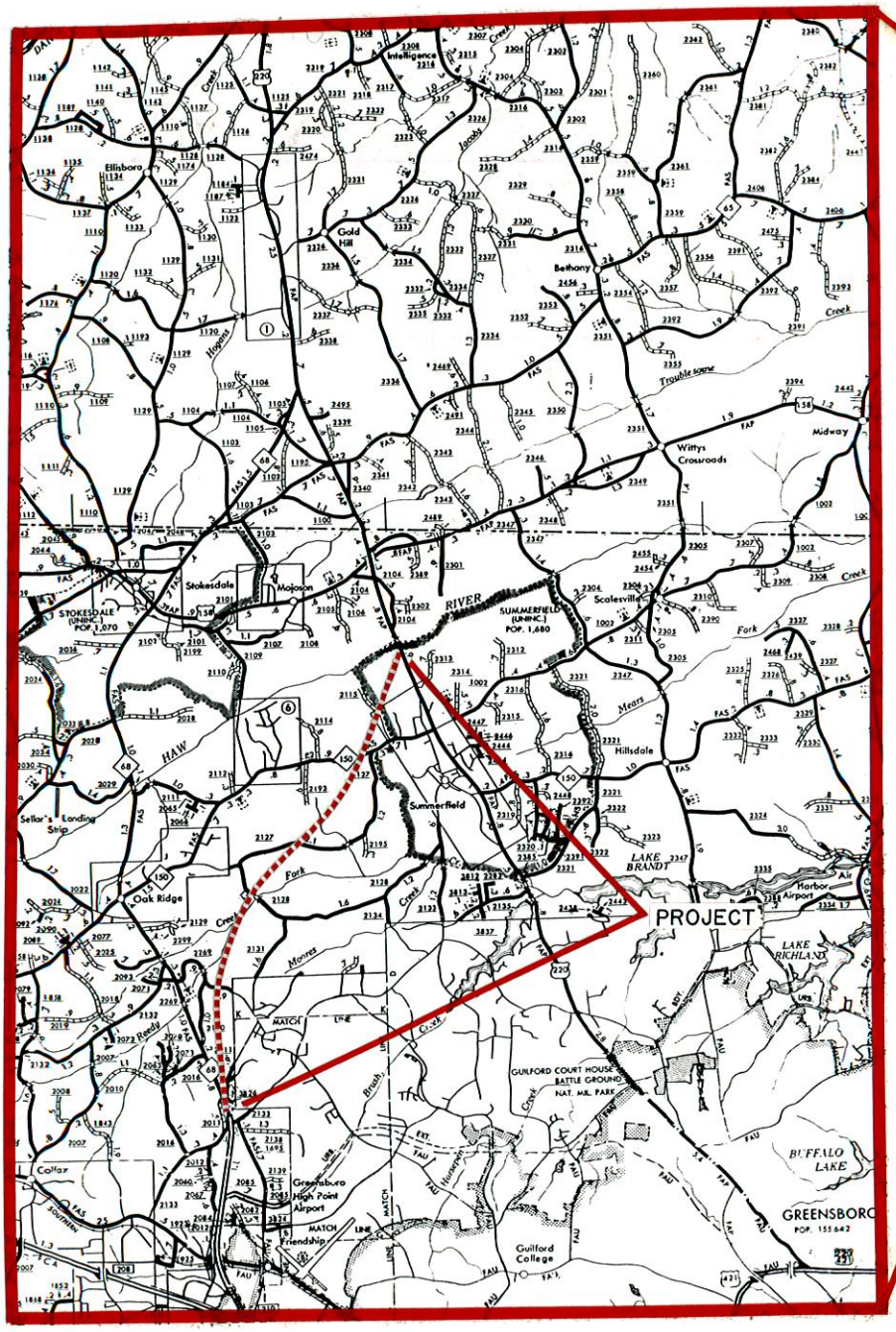
VI. FUTURE ACTIVITIES

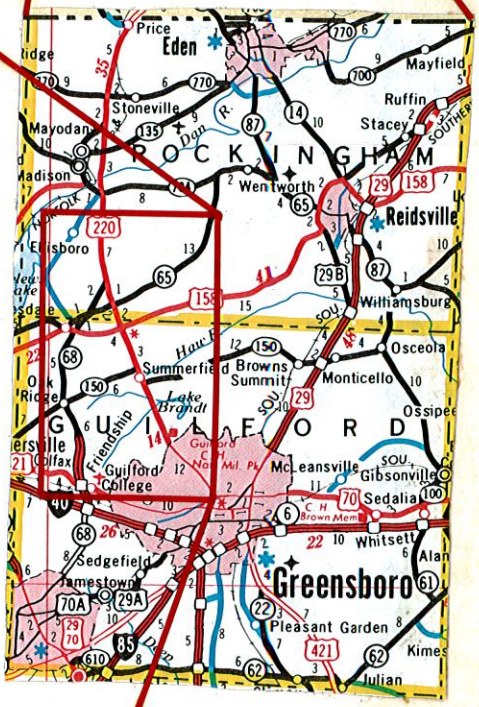
If the project is to be implemented at a future date, all feasible alternatives and their associated impacts will need to be evaluated in a planning/environmental document prior to that time, and a final decision made as to the most appropriate improvement. Negotiations are currently underway with a private engineering firm to prepare environmental impact studies for this project.

RBD/wp



NORTH CAROLINA



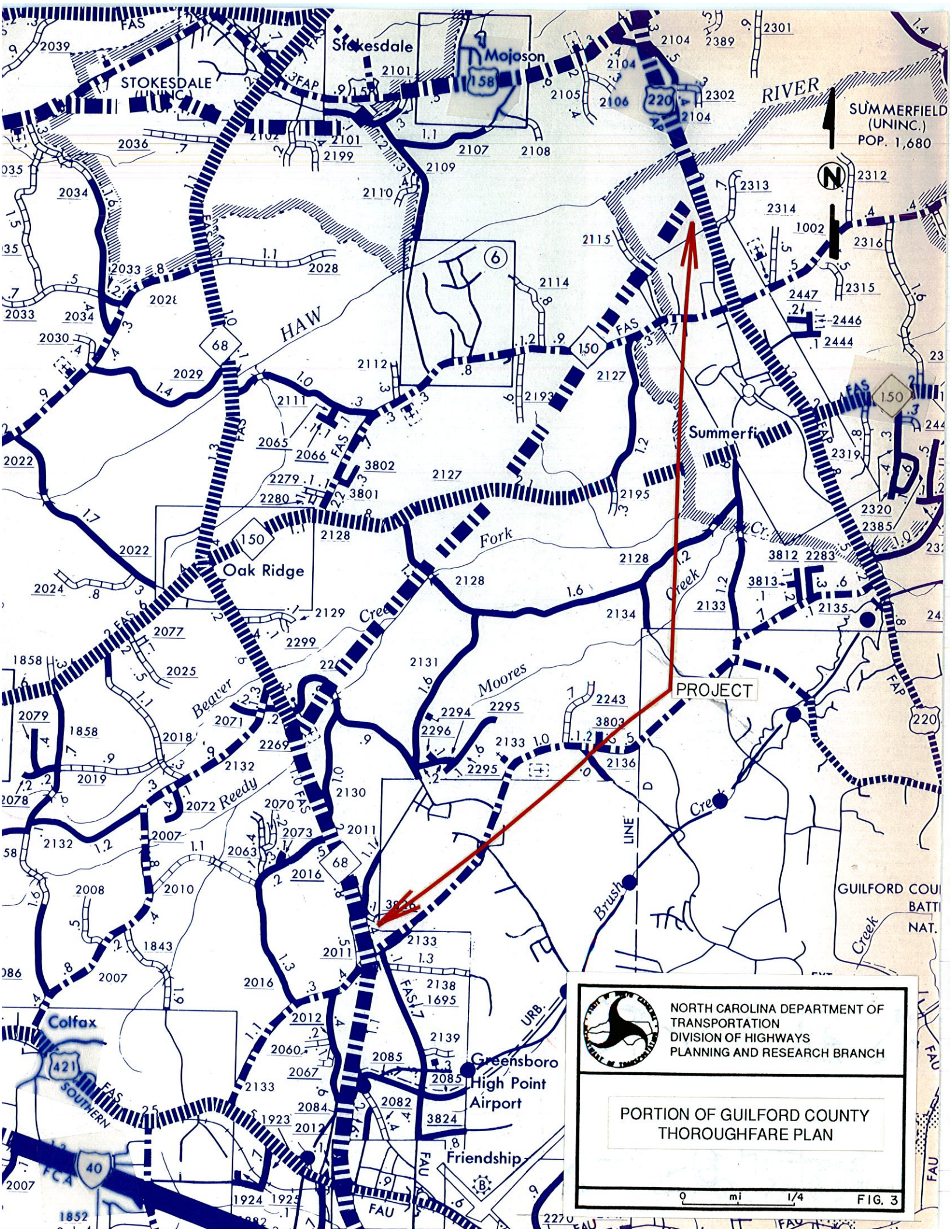


N

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PLANNING AND RESEARCH BRANCH

NC 68
FROM EXISTING FOUR-LANES
TO US 220
GUILFORD COUNTY, R-2413

FIG. 1


Stokesdale
Mojoson
STOKESDALE (UNINC.)
SUMMERFIELD (UNINC.)
POP. 1,680
RIVER
Oak Ridge
Summerfi
PROJECT
Colfax
Greensboro
High Point
Airport
Friendship
GUILFORD COU
BATTI
NAT.
HAW
Fork
Creek
Moores
Beaver
Reedy
Brush
LINE
FAS
FAP
FAU
URB.
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PLANNING AND RESEARCH BRANCH
PORTION OF GUILFORD COUNTY
THOROUGHFARE PLAN
0 mi 1/4
FIG. 3